

Claims

- [c1] 1. A liquid crystal display device, comprising:
a first substrate having a display region and a non-display region around the periphery of the display region;
a second substrate;
a liquid crystal layer sandwiched between the first substrate and the second substrate; and
a first shading film set between the first substrate and the liquid crystal layer within the non-display region of the first substrate.
- [c2] 2. The liquid crystal display device of claim 1, wherein the first shading film covers over the non-display region.
- [c3] 3. The liquid crystal display device of claim 1, further comprises a plurality of lead lines positioned over the non-display region of the first substrate.
- [c4] 4. The liquid crystal display device of claim 3, wherein the first shading film is positioned over the gap between neighboring lead lines within the non-display region and the first shading film and the lead lines are electrically isolated from each other and located at different height

levels.

- [c5] 5. The liquid crystal display device of claim 3, further comprises a second shading film within the non-display region set between neighboring lead lines such that the second shading film is electrically isolated from them.
- [c6] 6. The liquid crystal display device of claim 5, wherein the first shading film is set over the gap between the second shading film and neighboring lead lines, and the first shading film is located at a different height level from the second shading film and the lead lines, and electrically isolated from them.
- [c7] 7. The liquid crystal display device of claim 1, wherein the first substrate includes at least a thin film transistor with a gate, a source and a drain.
- [c8] 8. The liquid crystal display of claim 7, wherein the first shading film and the source/drain are fabricated using the same film material.
- [c9] 9. The liquid crystal display of claim 7, wherein the first shading film and the gate are fabricated using the same film material.
- [c10] 10. A method of fabricating a liquid crystal display device, comprising the steps of:

providing a first substrate having a display region and a non-display region around the periphery of the display region;

forming at least a thin film transistor in the display region, comprising:

forming a gate over the first substrate;

forming an insulation layer over the first substrate to cover the gate;

forming a channel layer over the insulation layer above the gate;

forming a source/drain over the channel layer,

wherein the process of fabricating the thin film transistor further includes forming a first shading film within the non-display region such that the first shading film is formed together with either the gate or the source/drain;

providing a second substrate;

forming a sealant on the surface of either the first substrate or the second substrate;

forming a liquid crystal layer on the surface of the substrate with the sealant;

binding the first substrate and the second substrate together; and

illuminating the sealant with light.

[c11] 11. The method of claim 10, wherein the first shading film covers the insulation layer within the non-display

region.

- [c12] 12. The method of claim 10, further comprises forming a plurality of lead lines over the first substrate within the non-display region, and when the first shading film and the gate are formed together in a same step, the lead lines and the source/drain are also formed together on the first substrate.
- [c13] 13. The method of claim 12, wherein the first shading film is formed over the gap between neighboring lead lines within the non-display region.
- [c14] 14. The method of claim 12, wherein in the step of forming the gate within the display region and the lead lines within the non-display region, further comprises forming a second shading film between neighboring lead lines such that the second shading film is electrically isolated from the lead lines.
- [c15] 15. The method of claim 14, wherein the first shading film is formed over the gap between the second shading film and neighboring lead lines.
- [c16] 16. The method of claim 10, further comprises forming a plurality of lead lines within the non-display region, and when the first shading film and the gate are formed together in a same step, the lead lines and the source/

drain are also formed together on the insulation layer.

- [c17] 17. The method of claim 16, wherein the first shading film lies underneath the insulation layer within the non-display region.
- [c18] 18. The method of claim 16, wherein the first shading film lies underneath the gap between neighboring lead lines within the non-display region.
- [c19] 19. The method of claim 16, wherein in the step of forming a source/drain over the channel layer and the lead lines over the insulation layer within the non-display region, further comprises forming a second shading film between the neighboring lead lines such that the second shading film is electrically isolated from the neighboring lead lines.
- [c20] 20. The method of claim 19, wherein the first shading film lies underneath the gap between the second shading film and the neighboring lead lines.